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Apprenticeship as a model for the international architecture of TVET

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Summary: This paper focuses on the nature and future of apprenticeships. It is important to have a clear notion about apprenticeship or rather of how the concept is used today. Apprenticeships are regarded as one promising way of a well organised TVET (Technical Vocational Education and Training). Generally, apprenticeships as a basic element of TVET should be well integrated into the education system. The topical move of reinventing apprenticeship in England, France and other countries around the world is part of a policy-driven agenda. In classical "dual-system" countries like Germany, Austria and Switzerland apprenticeships have to adapt to a new context as well. The future of apprenticeship will be a hybrid form of work-based practice and school-oriented learning.

Keywords: Apprenticeship, policy reform, learning

VET reforms

VET-Reforms are currently under way in nearly every European country. The main motivation for these reforms is found in the changing economic and societal principles. The knowledge-based society requires more skills in computer science, better language abilities, a greater orientation to entrepreneurship, and more general knowledge overall. Have traditional handicraft apprenticeships come to be jeopardised by these developments? Considering the international prominence of "work-based learning" or the concept of "situational learning", as well as endeavours to strengthen or reintroduce apprenticeship models characterised by their proximity to the world of work and their practical relevance, it seems that there is a clash of two rather oppositional tendencies in the reform discussions.

The present contribution aims to provide a historical view of these opposing trends. Education, and in particular professional training, oscillates between immediate professional requirements and more abstract, long-term demands. This discussion is to be found in the theory of education as well as in the development of educational institutions.

Europe-wide, it seems likely that a mixture of curricular and institutional practices continues to prevail, thereby doing justice to the hybridity of the world of work and the youths' different abilities.

Apprenticeship: concept and general perspective

Apprenticeship is a mode of learning, focusing on a specific learning site as well as a form of legitimate organisational setting in order to qualify and educate young adults for work and society. Enabling them to receive full membership in an occupationally determined small community, apprenticeship used to be an informal arrangement of teaching and learning historically. Today, apprenticeship is one (but by no means the only) type of TVET which suits the demands of trade and industry in a proper way.

The technological changes, however, will readjust the character of apprenticeships which have become more and more a basis for further education and training. Associations of trade and labour (the successors of guilds) define standards of teaching and learning that have to be adopted in vocational training and schools. Nowadays, it is the state (and not the guilds anymore) who supervises and governs TVET.

Apprenticeship is a common entreprise of state, associations or chambers, trades and educational stakeholders and one way to organise TVET which is itself ideally a part of an education system of a country.

A definition of apprenticeship is important insofar, as the term apprenticeship describes a formal kind of learning which always includes school attendance in countries with dual models.

Apprenticeship as a model of well organised TVET

What makes a vocational education and training system well-organized? A TVET system can be considered to be efficient and therefore well-organised when people accept this kind of qualification system as a career path for their own livelihood. Another advantage of an apprenticeship-based TVET system is the lower quota of unemployed youth. Apprenticeship-based TVET fulfils the demands of the labour market because the providers govern the number of learning places. In most countries where apprenticeships play an important role, firms are the gatekeepers for TVET. Furthermore, apprenticeships provide firms which have needs for certain qualifications with employees who exhibit these needed skills. However, for a long period of time, it was argued that the apprenticeship model was not innovative enough to adapt changes rapidly. As the generic skills offered by apprenticeships combined with specific and general knowledge allow youngsters to engage in lifelong learning, this view is outdated today.

The apprenticeship tradition: the example of Switzerland

In general, apprenticeship, i.e. the dual model in Switzerland as vocational education and training system has a very high reputation. VET graduates are considered to have a more practical approach than more schooled youngsters. Craft skills and pragmatic approaches are cited as advantages offered by employees who have completed vocational education and training. Against this background, it is quite interesting that dual models were not the result of a deliberate design of a great thinker or even a planning committee, but evolved or rather emerged out of several elements (see Gonon 2009).

Formalisation

In the 19th century, education and learning rose increasingly to become a public affair. The schooling of people grew to a task for nation-building. In this tradition the vocational schools and apprenticeships had to be included. A fundamental role played also the rise of an economic policy which furthered vocational schooling and regulations in order to become more competitive.

Amendements, legislation

The first legal acts and legislation with a wide-ranged impact happened in the dual system-countries between the period of 1880 until 1914. Before, there had been a lot of local, regional or branch-specific regulations. But in a comprehensive way this happened in the dawn of the First World War.

Contracts
The contracts between apprentices (or their parents) and the employer changed informal learning arrangements into a legally based defined program. In a defined period the employers and the apprentices had to fulfil their duties. The contracts fo apprenticeship were guided and supervised by charitable and counselling associations.

Examinations
The final examination is the touchstone of the quality of apprenticeship. In former times, it was just a piece of work under the supervision of the master. The rise of modern apprenticeships (up from 1880s) included also school-examinations and the teachers and the public became a part of the awarding body as well.

Apprenticeship as a part of the educational space

Even in dual system-countries apprenticeships are not as unique. In Switzerland, the regional diversity is quite high, especially between German-speaking and French-speaking cantons where apprenticeships are differently spread. However, the apprenticeship model is dominant in TVET. In the last years, a strong integration of TVET in the so-called "educational space" took place. Formerly, separated tracks of academic education and vocational education and training were more interwined. This permeability has led to a stronger influence of meritocratic logic in all parts of the education system. School-based learning and achievement is important for the access to even TVET and enables young adults to continue in higher education (Gonon 2005).

The basis for a renewal of apprenticeships

In the 20th century, and especially after the Second World War, both reform movements – the establishment of a new educational system in close connection with the economy and the vocationally oriented methodological and curricular penetration of the existing educational system – led to a real kickoff: it is now common standard for adolescents up to adulthood to attend school and/or get vocational training. According to Grubb and Lazerson (2004), this comprehensive approach was only possible due to a vocational orientation of the educational system, or in other words, due to the establishment of "vocationalism" as the basic principle and justification of the educational system. Today, all these phenomena are captured under the notion of "vocationalism", and some even refer to the aforementioned times as the "century of vocationalism" (Hayward 2004).

Work and education – two concepts in flux
These developments were further supported by an increasing need for technical and scientific knowledge in the world of work. As such, these changes added up to more complex production processes, and employees were required to be more flexible and prepared to acquire new knowledge. Today's keywords in the discussion of these topics are "key competences" and "life-long learning". As early as in the 1970s, Dieter Mertens claimed that the educational system should equip learners with the ability to acquire new knowledge and competences in a quick and flexible way, and he referred to this kind of ability as a "key competence". The slogan of "life-long learning", however, was created in the 1970s as a utopia of self-realisation beyond institutionalised education and has virtually become a categorical imperative for eloquent, computer skilled and entrepreneurial Europeans. The

1960s saw both the onset of the penetration of the world of work by information technology and a valorisation of in-house training and vocational training supported by the companies. In his 1962 article Education and Vocational Training, published in the "Berlin working papers for German adult education centres", the vocational pedagogue Adolf Schwarzlose challenged the seemingly insurmountable contrast between the two notions in the title. He explained the predominant view of the two notions as antipodes with reference to their historical development in Germany. Like Wilhelm von Humboldt and the Neo-humanists before him, he demanded that instead of conforming to political, economic and mechanic demands, education was meant to impart intellectual traditions and cultural heritage. As a kind of leftover, vocational training had come to be related only to the world of work, and in this conceptualisation, workers had merely been regarded as some sort of functional elements. In contrast, the perfection of individuality by way of cultivating cultural heritage was reserved to education. The pedagogue Theodor Litt had been the first to acknowledge such educational possibilities for the world of work, and with this reorientation, the opposition between vocational training and education had been overcome, since intellectual growth was now possible even outside traditional forms of education. As such, those intellectuals who generally dispraised of the world of work had been deprived of their most common argument (Schwarzlose 1962: 13).

In the USA the gap between liberal education and education for work was not as deep. The management theorist Peter F. Drucker emphasised the practical usefulness of education. According to Schwarzlose, the American debate stressed the fact, that educated society as the basis of economic prosperity should strive to free education from its aura of non-productivity and luxury (ibid.: 15). In the beginning of the 1960s with reference to further reform plans he argued that it was therefore essential to integrate education and vocational training.

Weakening the contrast between education and vocational training

The above considerations are still topical in today's reform debates on vocational training and education in Europe. In the English-speaking world, the "Vocational-Academic-Distinction" is no longer considered appropriate, too (Hager/Hyland 2003). It has become a widely accepted view to see vocational training as a form of education, and traditional forms of education at schools as economically advantageous.

The German pedagogue Adolf Schwarzlose was surely not the first to argue for the integration of education and vocational training. His contemporary Herwig Blankertz, holder of a chair of vocational pedagogy in the University of Munster, tried to present the contrast between neo-humanism and utilitarianism as fruitless and prone to be misunderstood (Blankertz 1985). In his view, the two philosophies are compatible in a reformed and vocationally oriented school. Looking further back in time, German reform pedagogy and especially American pragmatism are also cases in point. The education politician Georg Kerschensteiner from Munich and the educational philosopher Eduard Spranger reversed Humboldt's formula, according to which general education necessarily preceded any vocationally oriented training and education. Instead, true education went beyond profession, and profession as vocation was seen as the gate to the true civilisation of man. In Paul Monroe's 1913 encyclopaedia, which is oriented towards reform pedagogy, all forms of education are interpreted as vocational, and the prominent philosopher and pedagogue John Dewey criticised the traditional school curriculum on the grounds that it did not do justice to the cultivating character of modern industry. Thus, "vocationalism" does not

merely refer to institutional phenomena on the level of secondary school, but it is a decisive concept for the perception of education as a whole.

By extending the notion of education and emphasising vocational skills it was possible to provide easier access to education and to raise the population's educational level – to democratise education, as it were. However, the strong emphasis on economic relevance and commitment that has come to permeate all areas of education from kindergarten to university (Kliebard 1999) is sceptically seen as a reductionist and one-sided understanding of education.

Reinventing apprenticeship

It is the modernisation perspective which enforced more sophisticated ways of learning knowledge and skills for vocational purposes.

Apprenticeships are changing and become increasingly a part of the meritocratic logic and thus basis for further or higher education. Occupational profiles loose their profile orientation and make more general skills more important (Gonon et al. 2008). Apprenticeships are a good way of initiating youngsters with the role of their work.

Agreeing with this concept, there were different modes of reaching this aim. The first idea was to vocationalise schools.

It was the German pedagogue Kerschensteiner who propageted in 1908 already for young pupils "activity schools". This meant schools which enabled pupils to acquire an active role through learning by action and further more helped them to get acquainted with technical skills and with a positive attitude towards work.

Georg Kerschensteiner and the German tradition stressed much the supplementary character of schooling, which enforces and deepens the experience and the expert knowledge of the workplace.

Also the American philosopher and pedagogue John Dewey propagated activity schools. His concept was however more general, by adding vocational aims to the public or general schools.

Today it seems to be quite clear that there is a pressure towards more schooling. The knowledge economy that is oriented towards knowledge and science seems to further even more school-educated people.

The second idea is to transform workplaces more towards schools.

This kind of development is the pedagogization of the workplace itself. A lot of things really can only be learned by applying and by direct use. Computer skills are quite obvious examples for that. The difference between learning and work gets more and more blurred in the computing branches. Highly skilled workers and highly motivated persons in enterprises need to have a learning culture surrounding. It is the discovery of the workplace as a learning site, which helped to develop more pedagogical impacts in enterprises.

The workplace has to get more pedagogical relevance. This was not only an idea of pedagogues but also of economists. That is why it was said, that "pedagogical and economic reason converge".

Workplace and schooling get closer and closer or the workplace itself requires more and more "Bildung", best provided by enterprises themselves. This perspective is held by the ones only as a normative idea. Companies should develop in this direction, they should foster learning cultures. Others speak however of a development which is quite functional and necessary.

This view is however not widely shared but there are some pedagogues who argue that this is the way how pedagogy can play a role in this debate.

Another position is quite more critical related to this. The theory of differentiation argues that the logic of enterprise is to earn money and be competitive meanwhile

the logic of learning and teaching is not compatible with such aims. That is why the enterprise discerns different spheres.

A third concept is the so called “Transformation Theory”. It is said, that factories as schools are transforming themselves related to the requirements of the new economy and the globalization. Traditional ways of learning loose their importance, as well as traditional forms of in-company training will disappear.

It is clear out of these concepts that the idea of cooperation or collaborative work is the most appealing today. Every place of learning has its advantages. So the new perspective is asking for more precise arguments why this skill should be learned in this place and not in another.

Traditional learning in Vocational Education and Training (VET) was informal learning. Pupils or apprentices learned occasionally by doing, by trial and error and by observing and imitating the masters’ know how and attitudes.

This is a different concept related to the traditional school concept, which you can characterise as a model of formal learning.

The most used concept in school is the model of instruction. Teacher teach clearly defined subjects and pupils have to learn it, mostly by reading. The knowledge is mediated by a competent person, i.e. the teacher.

It is an effective way of transmitting knowledge. I stress this fact, because in literature quite often there is heavily critique about this kind of teaching. However, it is the most applied method in school and despite its low prestige teachers perform most of their time like transmitters. There are a lot of variations of this instructional model and surely it is not just an opposition of active teachers and students as passive vessels. The place of such teaching and learning is the traditional school.

The second model is the apprenticeship. A master is performing and an apprentice is observing him and asks and imitates in order to learn all important skills and attitudes. This is for acquiring skills the most appealing model. This kind of teaching and learning is most applied in the workplace.

A third one is not so clearly located whether in schools or in enterprises. It is a loosely arrangement of learning. The teachers or organisers of learning possibilities is quite in the background and pupils or apprentices themselves “discover” worthwhile facts and skills related to problems. This kind of problem-solving is highly appreciated among pedagogues.

What is it that makes for the specificity of the dual system, often also spoken of abroad as the “apprenticeship system”? In the following I want to analyse not the “system” aspects as such, as this has been convincingly done by W. D. Greinert (1994), in his differentiation of the market from the state model, but rather to refer to specific forms of learning. So I will return to the duality of “trade” and “learning” raised by Heinrich Zschokke and more particularly to the specific mix of workplace-related learning and knowledge communicated in school, to look at the specificities of vocational education as provided by the apprenticeship system and its possibilities for the future.

As has been said, in the appropriately named “dual system” one has not only two places of learning but also two different learning cultures. Learning in a scholastic context is clearly differentiated from learning in the context of the workplace. In the following I will concentrate on the vocational learning in the workplace as the origin of vocational education.

Michael Coy and his fellow researchers used a mainly ethnological approach to conduct a world-wide analysis of learning-processes in skilled industrial and traditional craft occupations, where these are based on teaching-methods integrated in the work-process. They describe African artisans, Japanese potters and American

industrial workers, finally defining certain specific features of such learning based on the “apprenticeship-model” in the following manner: “Apprenticeship is the means of imparting specialised knowledge to a new generation of practitioners” (Coy 1989, p.III f).

A specialised spectrum of knowledge and skills is in this way passed on to a new generation, so that the “novices” over the years become “experts”. The knowledge and skills here are not just “physical skills”, i.e. manual skills, but also area-specific skills in the design of economic processes and the establishment of social relationships. The characteristic in this process is the fact that such a spectrum of knowledge and attitudes cannot easily be transmitted in the conventional manner: “Apprenticeship is employed where there is implicit knowledge to be acquired through long-term observation and experience” (op. Cit.).

According to these findings, then, the apprenticeship has its place where implicit knowledge is required which cannot simply be communicated or written down. Such a learning-process therefore involves the acquisition of special skills and knowledge which cannot simply be looked up in the library, accessed through the Internet or communicated in some other manners through the media. Such skills and knowledge cannot be transmitted directly but require the active participation of the learner. As in a family situation, such learning includes intensive participation in social activity. Here, unlike in the classic teacher-pupil discourse, manual activity is in the foreground, a situation treated as exemplary by many educational reformers, from the acitivity – school – movement at the turn of the century to the advocates of project teaching today. Learning is not based, at least not primarily, on verbal communication, but transmitted through an object, in this case the product of work. This product-orientation is central because it is in the product itself, amongst other things, that success in learning becomes visible.

The learning relationship involves a transfer of “information” (in the broadest sense) which has a particular social and material arrangement as its precondition. In this – as a rule unlike at school – learning is not the primary aim, but often part of daily work. It happens “in passing”. Here knowledge and skills arise from the immediate activity and are often acquired by the novice through repetition. It is like learning to ride a bicycle or how to tie one’s shoe-laces: understanding and comprehension are best guaranteed through emulation and the actual performance of the task. The teacher or instructor still has the job of facilitating such a process through the presentation of the appropriate sequence of events, and if necessary giving reasons for exercises and repetitions. The essential of the learning process is the availability to the learner of sources of help which render emulation possible. That knowledge is “implicit” also means that the whole context has to be experienced and absorbed. It seems then that an important element is the “long-term observation” mentioned earlier. Progress in learning presupposes observation over a certain period of time which finally ends up in increasing skill which in turn can be gauged in the product of work.

This learning through activity was and remains characteristic of traditional craft skills, but has also marked the industrial culture built upon them and is certainly not confined to initial vocational training. Such implicit knowledge is not only difficult to communicate, but also little accessible to the public. The guilds and the skilled trades always took care to keep their specialised knowledge and their craft skills “secret”, that is, available only to a select circle. This was the basis for the economic success of their trade and also of many artisans’ pride in the fact that this spectrum of abilities had as its precondition an experience gained through long years, which was not available to just anyone. Closely connected to this principle of “imitatio” is another, “vocatio”. Such knowledge and skills were passed on in the trade as corporate values

and were reserved for a selected group of people, who were, as the Latin has it, “called” to this. This principle of imitatio, strongly rooted in preindustrial society, was in a broader sense aimed at the good behaviour of the apprentice, such aims being later extended by Georg Kerschensteiner to include social and civic concerns.

Historically we can see a clear growth in technical innovation based on the principle of division of labour, often leading to changes in craft and industrial work. These innovations were often triggered by new inventions which in turn made use of scientific discoveries. Unlike craft skills and knowledge, which are strongly linked to experience, the penetration of technology based on science is subject to the logic of the given sciences themselves. The history of industrialisation and of industrial labour can be described as a continuing penetration of the world of labour by scientific knowledge.

Access to such general knowledge in turn requires a specific initiation. This is not a professional knowledge arrived at on the basis of professional activity and experience, but rather an applied knowledge transferred onto work which changes the existing basis of the process. The principle of its effectiveness lies in this manifold applicability that is its numerous possibilities of transfer to new situations, which also means a potential for innovation. On the basis of the rationalisation and formalisation of processes a product can with the appropriate changes or re-organisation be manufactured more easily and with less difficulty by fewer people. The relationship of previous periods, where technology followed from artisan practice, has been stood on its head by modern, i.e. science-based technology (Radkau 1989). This change also finds expression in a change in the material basis, from the age of wood in which artisan skill still meant “almost everything”, to the age of iron, which opened up new perspectives on the organisation of the production process.

As such knowledge is of benefit to the process of production but cannot simply be transmitted through it, further education in general and later on the vocational schools in particular took on an increasingly significant role. These developments encouraged a shift of vocational education into scholastic institutions, which also had to take on more and more “all-round” educational tasks. The history of vocational education can therefore also be described as the gradual disengagement of the qualification-process from the immediate labour process. This is the case particularly for scientific and technologically-based knowledge.

Methodology: Meta-analysis of research and documents

This paper is based on hermeneutics and critical thinking. The methodology relies on careful reading and reflecting gathered material by taking into account relevant publications to support an argument. Empirical evidence is crucial and derived in these considerations by other studies.

Results

The result can be summarised insofar as we can conclude that apprenticeship as a dominant mode of vocational education has lost some ground. Nevertheless, it will play an important role for TVET as a model in the future. In countries with no or lost tradition of apprenticeships, it will undergo a certain revival. Key elements are the willingness of employers and other important stakeholders to stick to this kind of learning and formalise such an educational regime.

It is obvious that a knowledge-based economy also requires new forms of learning. The knowledge-based society is not – as it seems to be – based upon scientific knowledge as an exclusive form. Knowledge management and the fact that in

enterprise learning often is very closely linked to work, and even sometimes the limits are blurred, shows us that competence and development of competence is quite an important thing today. Competence development is not so close to formal learning. It is not exclusively functional, but includes also biographical aspects and a long-term commitment.

Now with the so-called third technological revolution machine-work is networked and computerised, and one may observe a further substitution of manual skills by the machine, which gives the industrial labour of today a different character from 20 years ago. These developments should not however lead us to draw hasty conclusions about present needs in terms of qualification: manual skills and accumulated knowledge will not simply disappear. In order, for example, to be able to work with information technology in industrial production one still needs to hold on to mechanical knowledge and skills, so as to be able to understand what computerised information is based on and to intervene when disturbances occur. Nevertheless, new technology can no longer be acquired exclusively through learning by doing, i.e. a learning immanent in the work-process itself, and one is dependent on instruction at school and in the workshop. Experience-led activities are losing in significance in the concrete work-process. As background knowledge and skills, though, they still remain important assets of the skilled worker, which differentiate him from the academic technologist and the unqualified novice.

As well as the cultural and social changes which have promoted an increasing scholarisation of society since the 19th century, there have then also been developments on the business side giving increasing importance to school and to training away from the workplace. The increasing weight of academic components and of general education within vocational education has therefore been noticeable in the case of most occupations. The recent reforms in Switzerland too, like the introduction of the vocational baccalaureate and the revision of the general educational syllabus of the vocational schools reinforce the dominance of the learning culture already pre-eminent in the rest of the educational system.

Even today many activities are predominantly based on experience and implicit knowledge. Alongside this, in the course of industrialisation a science-based technology has gained acceptance that is putting traditional skills under pressure. Skilled industrial and craft work now starts from a patchwork of skill and knowledge elements. Looking to the future of the dual system, Wolfgang Lempert (1998) sees reform leading to greater focus on the “pedagogic core” of vocational education. For him the most important principle is that of “rotation”, continuing periodical change between systematic and situational learning, with the public-sector schools devoted to the first, and the enterprise being particularly suited to the second. Experience must combine with wisdom, which means, to return to Zschokke once again, that “trade” would do well to take a leaf from the book of “learning”. Those who wish to enhance the attractiveness of vocational education through an increase in school-based and all-round education, as is exemplified by the recent reforms, should, on the other hand, also be concerned to ensure that learning in the enterprise is also given enough attention. It is this balance between practical application and the provision of theoretical background that gives the apprenticeship-system its strength and viability for the future, despite all the prophecies of doom.

The Vocational quest today however is to find a balance or an adequate mixture of different modes of learning and combining the advantages of several learning sites.

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